EDT 892 – Instructional Design

Microsoft Excel Course

for students at St. Paul Lutheran HS

Angela Ivie

**Analysis**

**Is there a learning need or performance gap?**

I have taught this computer applications class for two semesters. When my school asked me to create a computer applications course, they specifically asked for Excel skills to be taught. Teachers that want graphs in student work have often had to just teacher the students how to do it themselves. Up until the 2012-2013 school year, no students were taught any skills in Excel. Some teachers require some graphing in various projects that learners were unable to create on a computer. Most of my learners come into this class not having much (if any) background in Microsoft Excel. They do not know how to do basic data entry, organize data, use basic functions or create graphs. Many have never opened Excel before this class.

In both semesters I had the learners take a basic skills assessment. The test asked the learners to look at various spreadsheet-related questions and choose correct answers. Some questions asked about data in a table, some questions about what graphs say, and others about what kind of functions are useful in certain situations. Many learners scored less than 50%, and some of the “correct” answers were complete guesses. As I observed the learners take the skills assessment, I realized that part of the misunderstanding had to do with a lack of computer skills while part was also ineptness in basic mathematical reasoning.

**Learner Analysis**

This class is designed for learners at St. Paul Lutheran High School in Concordia, Missouri. These learners are in grades 9-12, aged 14-18, and most will graduate and move on to college. The gender information varies by semester, but is usually split roughly in half between male and female students.

Roughly half the learners in the school are American. 40% are international learners from countries such as China, Slovakia, Kenya, South Korea, and others. 25 learners every year are from Norway. For those learners whose first language is not English, this class is one that is a challenge, because it is a very independent course that has a foundation on self-taught learning. Other primary languages are Chinese, Slovakian, Korean, and Norwegian, and those are the regular students. On any given year we could also have Japanese, Vietnamese, German, and others.

**Instructional Goals**

* The learner will be able to input data into a spreadsheet.
* The learner will be able to organize data so that it can be used between spreadsheets and to create graphs.
* The learner will be able to use basic functions correctly, such as sum, division, and average functions.
* The learner will be able to create, edit and format graphs using data.
* The learner will be able to design and set up a budget.

**Key Players**

* I am the designer and subject matter expert.
* Anyone with basic Microsoft Excel skills could be the instructor.
* The audience members are students at St. Paul Lutheran High School in the Computer Applications class.

**Design**

**Task Inventory**

* Specify the desired performance
  + The learner will input data into a spreadsheet.
  + The learner will organize data so that it can be used between spreadsheets and to create graphs.
  + The learner will use basic functions correctly, such as sum functions, if statements, average functions, etc.
  + The learner will create, edit and format graphs using data.
  + The learner will design and set up a budget.
* Identify the primary learning tasks required to achieve a goal
  + Use information given to them through various formats to input data in a spreadsheet.
  + Assess and organize data in a spreadsheet that can be used to create graphs across multiple spreadsheets.
  + Identify and use functions in Excel to add, average, and create if/then statements.
  + Use data to create, edit and format graphs
  + Use a list of guidelines to create and develop a budget in Excel and group together information to create graphs for the budget.
* Inventory the steps required to perform complex tasks
  + Download tutorials from class wiki.
  + Follow instructions from tutorials to create various projects, spreadsheets, and graphs.
  + Use the internet to discover and identify various amounts required to create a budget for themselves.

**Performance Objectives**

* Given a bag of mini-M&M’s and a tutorial, the learner will sort the M&M’s by color and create a spreadsheet showing the number of M&M’s by color with 100% accuracy.
  + Performance: Sort M&M’s and create a spreadsheet
  + Condition: Sort M&M’s by color from a bag of mini-M&M’s and use a tutorial
  + Criterion: Create a spreadsheet showing the number of M&M’s by color with 100% accuracy
* The learner will use a tutorial to organize data that charts world climate zones. They will use sum functions to add columns with 100% accuracy so that it can be used to create graphs. They will format the graphs with the correct titles and axis names.
  + Performance: Organize data, create graphs, format graphs
  + Condition: Use a tutorial that includes data, titles and axis names
  + Criterion: Use sum functions to add columns with 100% accuracy, format graphs with correct titles and axis names
* Given a tutorial with written instructions, the learner will input data and use functions such as average and division with 100% accuracy. They will create graphs using the data and evaluate the data by writing an error-free paragraph describing the differences in the two sets of data.
  + Performance: Input data, use functions, create graphs, write a paragraph
  + Condition: Given a tutorial
  + Criterion: Use functions with 100% accuracy, evaluate the data by writing an error free paragraph describing the differences in the two sets of data
* Given a list of instructions, students will research and identify items and costs to go into a well-rounded budget during four days in the computer lab. The items will be listed out with an error free 1-2 sentence rationale per item in a Word document.
  + Performance: Research and identify items and costs
  + Condition: Given a list of instructions, during four days in a computer lab
  + Criterion: To go into a well-rounded budget, items will be listed out with an error free 1-2 sentence rationale per item
* Taking their budget, the learner will organize a budget in Excel and develop 2 different graphs that show how they will spend their money.
  + Performance: Organize a budget, develop graphs
  + Condition: Taking their budget
  + Criterion: Develop 2 different graphs that show how they will spend their money

**Development**

**Artifacts**

* Pre-Assessment Survey [link](https://docs.google.com/spreadsheet/viewform?formkey=dFhsZWk1ckRhZm5ORHFfZmplbU80a2c6MA#gid=0)
* M&M Graphing, World Climate Zones, Chart Wave Speed, and Budget Project information [link](http://splhscomputerapps.wikispaces.com/Excel+Files)
* Budget Project Completion [link](http://splhscomputerapps.wikispaces.com/Budget+Project+Completion)
* Post-Assessment Evaluation Survey [link](https://docs.google.com/forms/d/1oJnHvujx9PH8SHMKXPZjAXKQJLYDjES6xMXHfCfjLRE/viewform)

**Rubrics**

* Rubrics [link](http://splhscomputerapps.wikispaces.com/file/detail/Excel+Project+Rubrics.docx)

**Implementation**

**Lesson Plans**

* Day 1
  + Students will go to the [Student Home](http://splhscomputerapps.wikispaces.com/Student+Home) page and take a words per minute test to gauge how well they can type.
  + They will fill out the survey asking about their skills with Microsoft Excel, and create a dropbox.com account so that they will be able to submit their work.
  + The instructor will take email addresses from the survey to set up a folder for each student in Dropbox.
* Day 2
  + Instructor will instruct students to check their email and accept the invitation to their Dropbox folder.
  + Students will then go to the [Excel](http://splhscomputerapps.wikispaces.com/Excel) page, click on the link and take the skills test located there.
  + Students will take the survey at the bottom of the page, indicating how they did.
  + Students may then proceed to the [Excel Files](http://splhscomputerapps.wikispaces.com/Excel+Files) page, and begin working on the M&M Graphing document. Some students may not have time to begin the project before class ends.
* Day 3
  + Students will work on the M&M Graphing file. When they finish, they will need to learn how to upload their file to their Dropbox.
  + After the instructor verifies that the file is uploaded, the students can begin the World Climate Zones and Chart Wave Speed documents.
* Day 4-6
  + When students complete the three tutorial documents, they can begin researching and finding information on their budget.
  + The instructor will go over each budget as it is turned in and approve that all steps are complete.
* Day 7-8
  + When the instructor assures that each budget is complete, the student will go to the [Budget Project Completion](http://splhscomputerapps.wikispaces.com/Budget+Project+Completion) page and complete the spreadsheet part of their budget.
  + Students will submit their final project pieces and take the evaluation survey.

**Evaluation**

**Formative Assessment**

While students are working the instructor will move around and give feedback on the project. The instructor will troubleshoot, give advice (especially during the budget project), and make sure that students are on task throughout the unit. The pre-assessment and evaluation surveys also will give details about how the students are feeling about the unit.

**Summative Assessment**

The instructor will use the rubrics posted to evaluate the students’ work.